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ABSTRACT

This paper provides a summary of the knowledge base on serving students with special needs through inclusive education approaches, and it discusses the implications for restructuring regular and special education practices for school-based implementation of inclusive education. The first section is an introduction to some of the basic assumptions underlying the concept of inclusive education. The second section is a discussion of the findings from two recently completed large-scale studies on the variables that influence learning. One was a synthesis study that began with a meta-review and synthesis of research on variables related to school learning in both regular and special education literature. Sources included 179 handbook chapters and 91 research syntheses. The extent to which findings from these sources form a consensus on the ranking of influences on school learning indicate a shared knowledge base for establishing powerful inclusive learning environments responsive to the needs of all students. The second study was a feasibility study that focused on implementing inclusive education by incorporating what works to improve student learning. Findings were examined from a large-scale study of a statewide initiative for inclusive education approaches for special needs students carried out by the Pennsylvania Department of Education. This study examined the effects of 13 widely known programs. Results from a survey of administrators and teachers participating in these programs suggest an overall positive attitude toward the implementation and outcomes of various inclusive education models. The final section is a discussion of the implications of what is known about what works toward an inclusive approach to special education delivery. (Contains 35 references.) (SLD)

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Serving Students with Special Needs through Inclusive Education Approaches

Margaret C. Wang

There is no question that one of the most pressing educational reform concerns of the 1990s is how to effectively respond to the educational needs of the increasingly diverse student populations schools are challenged to serve. The current "two systems" approach (regular and special education) has failed to provide for the educational needs of many students who require greater-than-usual educational support. Although it is widely recognized that there is a substantial knowledge base on what yields better learning that can be culled to greatly enhance schools' capacity for improvement, there has been very little evidence of such applications. The twofold purpose of this chapter is to provide a summary of this knowledge base and to discuss its implications for restructuring regular and special education practices for school-based implementation of inclusive education.

This chapter is organized into three sections. The first is an introduction to some of the basic assumptions underlying the concept of inclusive education. The second section is a discussion of the findings from two recently completed large-scale studies on the variables that influence learning. The final section is a discussion of the implications of what is known that works toward an inclusive approach to special education delivery.

SOME BASIC ASSUMPTIONS

Clearly, a restructuring of the place of special education within the schools is occurring (Wang, 1994). A major feature of the process of this restructuring has been described as "progressive inclusion," that is, the gradual increase in the numbers and proportions of children with special needs who receive their special education who enrolled in regular classes and schools. Some educators believe the progress is too slow and the inclusiveness too limited while others see it as too rapid and based on arguable assumptions. But everyone appears to agree that if high-quality integrated special education is to be

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achieved, there must be strong teamwork by educators of all kinds, using the best of current know-how. Recent advances in theory and research, along with innovative developments, point to two emerging principles regarding inclusive education: (1) for moderate learning improvements among children with special needs, avoid special placements and, instead, integrate nearly all children with special needs into regular classroom settings with "ordinary" children; and (2) for extraordinary improvements for all children, employ educationally effective practices that focus directly on classrooms and homes, where learning takes place (Wang, Reynolds, & Walberg, 1994). Some of these advances are summarized below.

Advances in Theory and Research

Substantial conceptual changes during the past two decades have been observed in the type of information available on individual students and their learning. Among the significant developments is an increased recognition that certain personal and learning characteristics are alterable (Wang, Haertel, Walberg, 1993). Some prime examples of variables no longer considered static are family characteristics, such as parental expectations and family involvement (Bempechat, 1991; Davis, 1991; Iglesias, 1993); cognition and processes of learning (Brown, 1994; Resnick, 1993; Sternberg, Okagaki & Jackson, 1990); and student motivation and the roles students play in their own learning (American Psychological Association, 1993; Corno & Kanfer, 1993).

Recognition of the alterability of these learner characteristics has led to an increasing interest in studying ways to modify the psychological processes and cognitive operations used by individual students, and to reshape learning environments and instructional strategies that are effective in accommodating learner differences. As Fenstermacher and Goodlad (1983) noted in the introduction to their book, *Individual Differences and the Common Curriculum*, it is the schools' responsibility to structure educational programs to account for these alterable differences and to ensure educational

outcomes for every student, while maintaining the standard of mastering a common curriculum of elementary and secondary education in the U.S.

Schools' Response to Student Diversity

Despite the advances in theory and research on individual differences in learning and effective teaching practices, the knowledge base has had very little impact on how schools respond to student diversity. For example, although opportunities for students requiring greater-than-usual educational support through well-intentioned "special" programs (e.g., special education and other remedial and compensatory education programs) are available, implementation of these programs for the most part has not measured up to the outcome standards considered critical indicators of educational equity (Brandt, 1989; Wang & Reynolds, 1995). Many students have difficulty learning and need better help than they are now receiving.

There are serious problems in how individual differences are characterized and in the way information is generated and used for instructional decision making. In current practice, diversity in processes of learning and instructional support needs among students typically is handled by classifying or labeling perceived differences in terms of macrolevel characteristics (i.e., children at risk, low-achieving children from poor families, children with learning disabilities, and children who are socially/emotionally disturbed). Then, the "identified" or "certified" students with these spuriously defined labels are placed homogeneously in narrowly framed categorical or special education programs.

Although well-intentioned, implementation of these programs has become a major problem source in schools. In too many cases this practice of classifying students for instruction based on certain perceived differences involves the delivery of radically altered and not always appropriate curriculum to selected students. There is a tendency to seriously neglect fundamental content (Oakes, 1985), and there is substantial evidence to suggest that students may actually receive *less* instruction when schools

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provide them with specially designed programs to meet their particular learning needs (Allington & Johnston, 1986; Haynes & Jenkins, 1986).

Current approaches to providing for student diversity often contribute to children's learning problems. One such problem is characterized by the "Matthew effect" (Stanovich, 1984), in which students who show limited progress in early phases of instruction in basic subjects, such as reading, tend to show progressive retardation over succeeding years. It has been estimated, for example, that the lowest-achieving students in the middle elementary grades may be reading only one-tenth as many words per day in school as students in a highly skilled reading group (Reynolds, 1989). The Matthew effect is also reflected in teacher expectancy research. For example, teachers tend to give less feedback to students with special learning needs, call on them less often, and do not wait as long for them to answer as they do for other students (Cooper, 1983). Such differences in educational practices that work to the disadvantage of selected groups of students have contributed to, rather than ameliorated, the problem of school failure among an alarming number of students.

Providing educational opportunities without ensuring educational outcomes perpetuates inequity in a more subtle form. Schools cannot address the equity issue simply by establishing special programs in an effort to provide educational opportunities for students. Educational outcomes must apply for every student. The practice of compensating for learner differences by making school success easier for selected students through differential standards cannot be accepted as an indicator of educational equity.

Prospects for Improvement

If all students are to successfully complete a "basic" education or common curriculum, today's schools must undergo major conceptual and structural changes. Some students require more time and extraordinary instructional support to master the common curriculum, while others require less time and

little direct instruction. Thus, achieving equity in educational outcomes requires a shift from a fixed to a flexible, adaptive system to ensure the opportunity to learn for every student.

Findings from recent research, along with the practical wisdom culled from implementing innovative programs in schools, significantly contribute to our current understanding of what constitutes effective teaching and how student learning can be enhanced. These findings suggest alternative approaches to delivering instruction and related service supports that are substantially superior to widespread traditional practices. Based on the wealth of findings from the past two decades of "effectiveness" research, many varieties of experimental programs can be envisioned that would enhance the capabilities of schools to more effectively address student diversity and equity in student learning outcomes (Ainscow, 1991; Lipsky & Gartner, 1989; United States Department of Education, 1986, 1987).

Information Needs

Although a number of innovative practices and programs are in operation and can be replicated or extended, there is very little evidence of systematic application of advances from the past two decades of research on effective teaching and school effectiveness. The need for systematic information that addresses program design and implementation-related concerns has been widely expressed by school personnel and policy makers. Presently, little information in usable form is available to assist local schools and school districts in selecting programs and practices for meeting their specific program improvement and implementation needs.

If widespread systematic implementation of knowledge from the past decade of research and innovative program development efforts is to occur in schools with a high level of precision and credibility, significant efforts need to be made in building a knowledge base on what constitutes school effectiveness and the conditions that influence effective implementation. Local schools and related

social service agencies are presently faced with two demanding tasks: (1) surmounting the difficulty of obtaining information on the design, implementation requirements, and efficacy of innovative programs and practices, and (2) specifying criteria for making informed decisions on the feasibility and site-specific compatibility of programs and practices that will best serve the program improvement and implementation needs of a particular school or school district. Such a database is sorely lacking.

TOWARD A KNOWLEDGE BASE FOR INCLUSIVE EDUCATION

Successful implementation of inclusive education approaches to provide for student diversity is built on the assumption that there is a high degree of agreement among "regular" and "specialist" educators about which variables or principles of instruction are important in their efforts to address the diverse learning needs of individual students, including those who require special intervention. In this section, findings from two recently completed large-scale studies on variables that influence learning are examined to ascertain whether there is one or several distinct knowledge bases to be considered in achieving the goal of "progressive inclusion" of children with special needs in regular education programs, i.e., to ascertain whether there is a consensus among education professionals on what they know about this issue. The first study is a meta-review of empirical results from research on learning influences, combined with a survey of expert judgments about influences on school learning by several distinct groups of educational professionals, including regular and special education teachers, school administrators, psychologists, educational researchers, and policy makers (Reynolds, Wang & Walberg, 1992; Wang, Haertel & Walberg 1990). The second study is a large-scale, field-based study of the implementation and outcomes of selected inclusive education programs for serving students with special needs (Hill & Weishew, 1993; Pennsylvania Department of Education, 1992).

The Synthesis Study

The study began with a meta-review and synthesis of research on variables related to school learning. The review covered literature in both regular and special education, including results reported in 179 handbook chapters (e.g., *Handbook of Research on Teaching*, Wittrock, 1986; *Handbook of Special Education: Research and Practice*, Wang, Reynolds & Walberg, 1987-1989, 1991); findings compiled from ninety-one research syntheses in annual review series published in education, psychology, sociology, and special education; and a survey of expert opinion from leading researchers and practitioners. The extent to which findings from these three sources form a reasonable consensus on the ranking of influences on learning indicates a shared knowledge base for establishing powerful inclusive learning environments that are responsive to the diverse needs of all students, including those requiring greater-than-usual intensive, even aggressive, forms of instruction.

Findings from the Literature

Based on a conceptual framework of learning influences, Wang, Haertel, and Walberg (1990), through a literature review, identified 228 variables that are important to school learning. The variables were then organized into twenty-eight subcategories and further classified into six categories (see Table 6.1).

TABLE 6.1

Twenty-Eight Categories of Influence on School Learning

Category/Subcategory	Illustrative Variable
Student Aptitude includes gender, academic history, and a variety of social behavioral, motivational, cognitive, and affective characteristics.	
1. Metacognitive Processes	Comprehension monitoring (planning, monitoring effectiveness of attempted actions and outcomes of actions; testing, revising, and evaluating learning strategies)
2. Cognitive Processes	Level of specific academic knowledge in subject area instructed
3. Social and Behavioral Attributes	Positive, nondisruptive behavior
4. Motivational and Affective Attributes	Attitude toward subject matter instructed
5. Psychomotor Skills	Psychomotor skills specific to area instructed
6. Student Demographics	Gender and socioeconomic status
Classroom Instruction and Climate includes classroom routines and practices, characteristics of instruction as delivered, classroom management, monitoring of student progress, quality and quantity of instruction provided, student/teacher interaction, and classroom atmosphere.	
7. Classroom Management	Group alerting (teacher uses questioning/recitation strategies that maintain active participation by all students)
8. Student-Teacher Social Interaction	Student responds positively to questions from teacher and other students
9. Quantity of Instruction	Time on task (amount of time students are actively engaged in learning)
10. Classroom Climate	Cohesiveness (class members are friends, sharing common interests and values; emphasis on cooperative goals)
11. Student and Teacher Academic	Frequent calls for extended, substantive interaction oral and written response (not one-word answers)

12. Classroom Assessment	Use of assessment as a frequent, integral component of instruction
13. Classroom Instruction	Use of clear and organized direct instruction
14. Classroom Implementation and Support	Establishing efficient classroom routines and communicating rules and procedures.

Context includes community demographics, peer culture, parental support and involvement, and the amount of time students spend out of class on activities such as television viewing, leisure reading, and homework.

15. Home Environment/Parental Support	Parental involvement in ensuring completion of homework
16. Peer Group	Level of peers' academic aspirations
17. Community Influences	Socioeconomic level of community
18. Out-of-Class Time	Student participation in clubs and extracurricular school activities

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Program Design refers to the physical and organizational arrangements for instructional delivery, and includes strategies specified by the curriculum and characteristics of instructional materials.

19. Curriculum Design	Instructional materials employ advance organizers
20. Program Demographics	Size of instructional group (whole class, small group, one-on-one instruction)
21. Curriculum and Instruction	Alignment of goals, content, instruction, student assignments, and evaluation

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School Organization refers to culture, climate, policies, and practices, and includes demographics of the student body, whether the school is public or private, funding for categorical programs, school-level decision-making variables, and school-level policies and practices.

22. School Culture	Schoolwide emphasis on and recognition of academic achievement
23. Teacher/Administrator Decision Making	Principal actively concerned with instructional program

24. Parental Involvement Policy	Parental involvement in improvement and operation of instructional programs
25. School Demographics	Size of school—i.e., number of students
26. School Policies	Explicit schoolwide discipline policy

State and District Characteristics refers to governance and administration, state curriculum, and textbook policies, testing and graduation requirements, teacher licensure, provisions in teacher contracts, and district-level administrative and fiscal variables

27. State-level Policies	Teacher-licensure requirements
28. District Demographics	School district size

Adapted from M.C. Wang, G.D. Haertel, and H.J. Walberg, "Synthesis of Research: What Helps Students Learn?" *Educational Leadership*, December 1993/January 1994, pp. 74-79.

Figure 6.1 shows the twenty-eight, subcategories in order of their influence on learning, ranging from most to least influential. Average scores are shown for each subcategory, presenting the combined results from the content analysis, the synthesis, and the survey of experts. (Note: The data from the content analysis, the quantitative synthesis, and the survey of educational research experts were transformed into T scores to make the data comparable. T scores are standard scores with a mean of 50 and a standard deviation of 10.)

As shown in Figure 6.1, the five categories that had the greatest influence on school learning were classroom management, metacognitive processes, cognitive processes, home environment/parental support, and student and teacher social interaction. The five categories with the least influence were program demographics, school demographics, state-level policies, school policies, and district demographics.

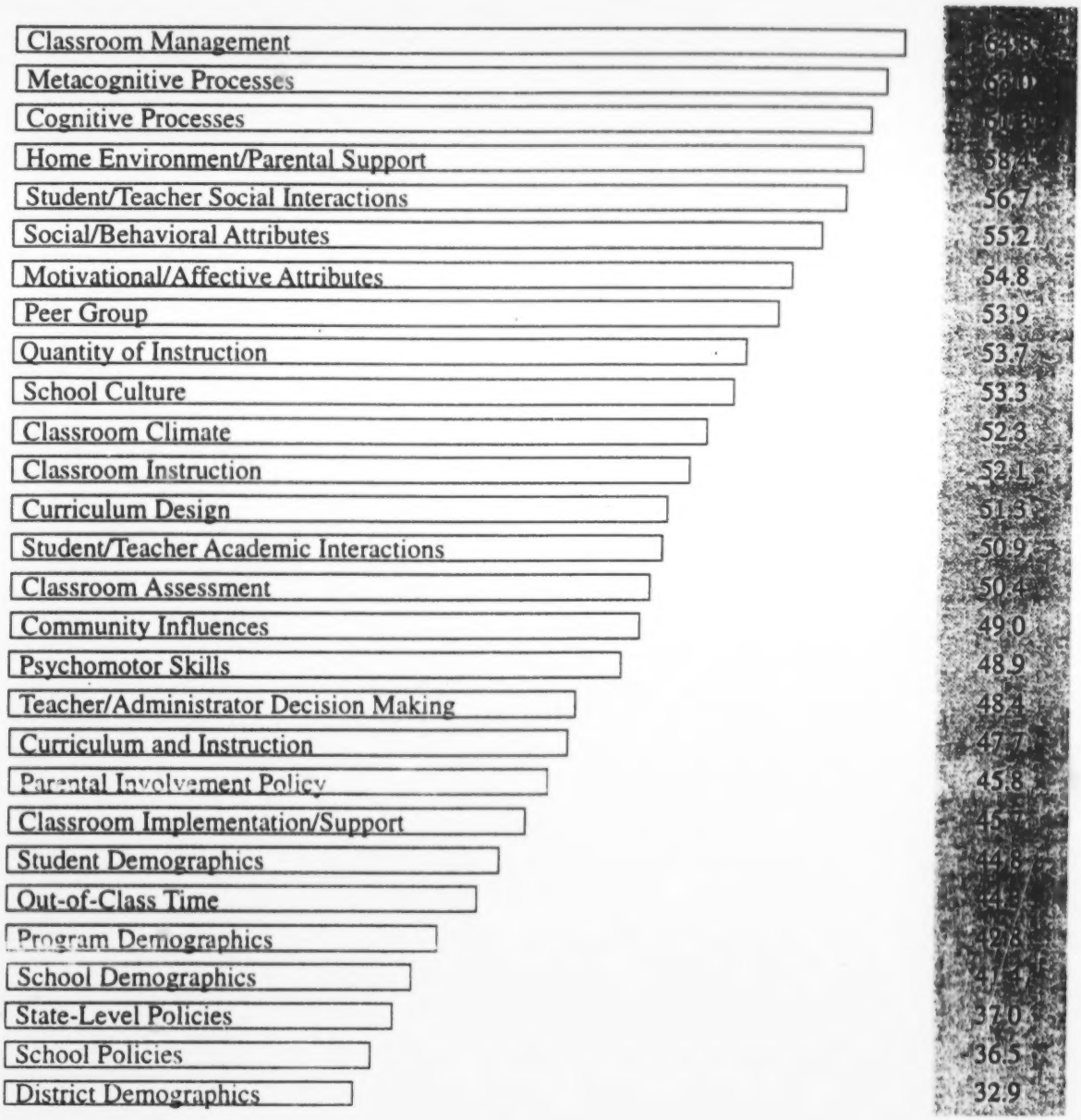

Figure 6.1 Relative Influences on Learning

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Direct influences, which are the variables directly linked to student learning and teacher instruction, have a greater impact on learning than indirect influences. Direct influences include the amount of time teachers spend on a topic and the quality of their social interactions with students. Indirect influences include policies adopted by a school, school district, or state and organizational features such as site-based management. These influences may only affect direct influences; thus, they appear to be weaker and less consistent. For example, implementing a district-wide policy for teacher evaluation does not guarantee that students in any given classroom will have a competent teacher.

To better understand which influences are most important, the twenty-eight subcategories were further grouped into six broad types of influences (see Table 6.1). The average influence of each broad type is as follows: Student Aptitude, 54.7; Classroom Instruction and Climate, 53.3; Context, 51.4; Program Design, 47.3; School Organization, 45.1; and State and District Characteristics, 35.0. These averages confirm the principles of strong direct influence and weak indirect influence. Each of the six types of influence is discussed in detail below.

Student Aptitude

Educators have long known that school learning is strongly influenced by an individual's psychological attributes. Six were identified in the study. The most significant aptitude is metacognition. *Metacognitive processes* refers to students' executive capacity to plan, monitor, and, if necessary, re-plan learning strategies. Research on these processes has generated new curricula and new instructional techniques, such as reciprocal teaching and cognitive skills instruction.

The subcategory *cognitive processes* was also identified as highly influential. Cognitive processes include not only general intelligence, but also prior knowledge, competency in reading, basic mathematical skills, and verbal knowledge.

Social and behavioral attributes is an important subcategory, given the social nature of schooling. Children who frequently engage in disruptive behavior, such as talking out of turn or hitting other children, often perform poorly in school, while cooperative children who engage in positive and constructive behavior are more likely to perform well.

The subcategory *motivational and affective attributes* received increased attention in the 1980s. Student motivation determines effort and perseverance with regard to school tasks. The roles of effort and perseverance, long acknowledged as important by classroom teachers, are now regarded as key attributes necessary for developing self-controlled, self-regulated learners.

Data on the two remaining influences under the student aptitude category, *psychomotor skills* and *student demographics*, show they are minimally influential.

Classroom Instruction and Climate

Eight subcategories of classroom instruction and climate influences were identified from the literature. When averaged, they had nearly as much impact as student aptitude influences. The most influential subcategory, *classroom management*, includes group alerting, learner accountability, smooth transitions, and teacher "with-it-ness" (Kounin, 1970). Effective classroom management increases student engagement, decreases disruptive behavior, and makes good use of instructional time.

Constructive student and teacher social interaction also have a documented effect on school learning. The frequency and quality of interaction contribute to students' self-esteem and foster a sense of membership in the class and school.

The subcategory *quantity of instruction* has been well researched. There is strong agreement that students need to be fully engaged in their academic pursuits and teachers need to make wise use of instructional time. Other things being equal, moreover, the more time, the better, within limits.

Classroom climate refers to the social-psychological dimensions of classroom life, including cooperation among teachers and students, common interests and values, the pursuit of common goals, a clear academic focus, well-organized and well-planned lessons, explicit learning objectives, an appropriate level of task difficulty for students, and an appropriate instructional pace (Haertel, Walberg & Haertel, 1981).

The subcategory *student and teacher academic interaction* is fairly self-explanatory. It reflects teachers' questioning styles, praise, reinforcement, and use of correctives.

Classroom assessment was not found as influential as some other instructional subcategories. Classroom assessment and feedback may directly benefit students by enhancing their mastery of content. However, the impact on student achievement of district, state, and federal testing programs is less clear.

The subcategory *classroom instruction* refers to techniques for ensuring that students understand the goals of instruction and the content being presented. One of the clearest examples of such techniques is direct instruction, which emphasizes systematic sequencing of lessons, including the use of review, the presentation of new content and skills, guided student practice, the use of feedback and correctives, and independent student practice.

Classroom implementation and support was the least influential of the eight subcategories. It deals with the delivery of instructional services, staff development, and the adequate training of teachers. Implementation and support variables are not direct determinants of student performance.

Context

Four out-of-school contexts influence school learning to nearly the same degree as the student aptitude and the classroom instruction and climate influences. The subcategory *home environment/parental support* was among the most influential of the twenty-eight subcategories. The benefits of family involvement in improving students' academic performance and school attendance, and

in reducing numbers of dropouts, decreasing delinquency, and reducing pregnancy rates (Epstein, 1991; Peterson, 1989; Walberg, 1984) are well documented. The data reported in the current research also indicate that the *peer group* has a strong influence on school learning.

Community influences had less of an effect on school learning than did either the *home environment/parental support* and *peer group* subcategories. Only recently has the role of community as an influence on school learning been examined through empirical studies, and the evidence is insufficient to suggest strong effects.

Out-of-class time includes student activities such as extracurricular activities and social clubs. These activities were not as power an influence on school learning as were the other contextual influences.

Program Design

As a set, the three program design categories were moderately influential on learning. Well-designed textbooks, appropriate organization of instructional groups, and effective alignment of goals and classroom activities yield moderate benefits.

School Organization

On average, school organization also showed moderate influence. Of the five subcategories, *school culture* was the most influential. School culture is defined as an ethos conducive to teaching and learning. For example, a school might have an academic atmosphere that is conveyed through participation in intramural academic competitions or in the use of incentives to reward student scholarship.

The subcategory labelled *teacher/administrator decision making*, which focuses on the role of the principal as an instructional leader, was not as influential as school culture. Although much attention

has been paid to the importance of the role of the principal, there is not a strong link between the principal's leadership and student performance. A principal who exhibits outstanding leadership with his teaching staff may have his influence mitigated by unskilled classroom teachers or unmotivated students.

Parental involvement policy which refers to parent involvement in the improvement and operation of the instructional program, also was less influential than school culture. A school may adopt such a policy, but successful implementation of the policy at the classroom level is what affects student learning.

The last two subcategories, *school demographics* and *school policies*, have relatively little influence on school learning. School demographics include the size of the school, the number of classrooms, and the number of teachers and aides. Examples of school-level policies include assertive discipline and telephoning home when a child is tardy or absent. The adoption of such school-wide policies does not guarantee quality classroom instruction and may have little impact on student learning.

State and District Characteristics

Of the twenty-eight subcategories examined, *state-level policies* and *district demographics* were among the least influential in improving student learning. Most of the variables included in these two subcategories are associated with school governance and administration. Examples of state level policies include: requirements for teacher licensure and evaluation, and guidelines for the development and selection of curricula and textbooks. Examples of district demographics include per-pupil expenditure, degree of school district bureaucratization, and presence of contractual limits on class size. Given that state and district influences are many steps removed from day-to-day classroom life, it is understandable that their impact on student learning would be limited.

Expert Judgments

The question whether there is consensus among various educators on which variables they consider important to learning was addressed through a survey study of the expert judgments of eight stakeholder groups, namely, special education teachers, regular education teachers, state directors of Chapter 1 programs, state directors of special education, school principals, school psychologists, special education researchers, and education researchers/authors. (Chapter 1 is a congressionally mandated federal program in the U.S. that is designed to provide supplementary support for low-achieving students from economically disadvantaged homes.) Table 6.2 reports the Pearson Product Moment correlation coefficients among mean ratings of the original 228 variables by the eight educator groups. It may be noted, for example, that the correlation of mean ratings by regular and special education teachers was .95. That was the highest correlation observed. All correlations tended to be high; the median among twenty-eight correlations was .88. The lowest correlation (.77) was between state directors of special education and education researchers/authors.

Considering the entire matrix of correlations, the findings support a very high degree of consensus among the educator groups studied about the variables that are important to enhancing the learning of children in school. Furthermore, the data suggest a remarkable similarity in the views of regular and special education teachers about principles to be considered in their teaching (Reynolds, Wang & Walberg, 1992). To the extent that regular and special educators work from a common knowledge base on school learning, there is added reason to press toward an inclusive approach to special education delivery.

TABLE 6.2

Pearson Product Moment Correlations for 228 Variables Rated by Eight Educator Groups

Educator Group (N)	ERA (61)	SER (55)	Sps (207)	Spr (91)	SDSE (27)	SDCP (41)	RET (192)	SET (449)
Education researchers/authors (ERA)	1.00							
Special education researchers (SER)	.91	1.00						
School psychologists (SPs)	.88	.90	1.00					
School principals (Spr)	.84	.85	.93	1.00				
State directors of special education (SDSE)	.88	.87	.89	.87	1.00			
State directors of Chapter 1 programs (SDCP)	.81	.84	.92	.92	.88	1.00		
Regular education teachers (RET)	.80	.82	.92	.94	.82	.89	1.00	
Special education teachers (SET)	.78	.85	.95	.92	.88	.89	.95	1.00

Adapted from Table 3 in M.C. Reynolds, M.C. Wang and H.J. Walberg, "The Knowledge Bases for Special and General Education," *Remedial and Special Education*, September/October 1992, pp. 6-10 and 33.

Integrating Special Education Students in Regular Classes: A Feasibility Study

To determine the feasibility and effectiveness of implementing inclusive education by incorporating what works in regular and special education to improve student learning, findings were examined from a large-scale study of the implementation and effects of a statewide initiative for inclusive education approaches to serving special education students. The initiative, known as the Quality Education Initiative (QEI), was introduced by the Bureau of Special Education of the Pennsylvania Department of Education (PDE) in 1988 to facilitate school implementation of an inclusive approach to education and related service delivery.

PDE asked the developers of thirteen widely known innovative programs to work with local schools in implementing their respective programs as an alternative inclusive education program. (For information on the programs, see Pennsylvania Department of Education, 1992.) The overall goal of this initiative was to establish a statewide system of improvement, not merely a system of islands of excellence. Major expected outcomes were: a) demonstration of the feasibility of implementing a variety of innovative model programs by local schools to provide special education and related services in regular school settings; (b) development of a database on features and implementation requirements for establishing and maintaining innovative inclusive models of service delivery; (c) assessment of the outcomes of effective implementation of inclusive education programs; and (d) dissemination of information about inclusive education in ways that are useful for replication by schools throughout the Commonwealth.

In evaluating inclusive education approaches in general and QEI in particular, the following questions were addressed: Is it feasible to achieve a high degree of implementation of the various inclusive education models in only three years? Does implementation lead to the intended classroom process and achievement outcomes of inclusive education? Are there major differences in the pattern of

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classroom behavior between special education students who are mainstreamed in inclusive education classes and their regular education peers? Are there major process and achievement differences between inclusive education classes and comparison classes? What is the assessment of the program by administrators and teachers?

Is Widespread Implementation of Inclusive Approaches to Special Education Delivery Feasible?

A major question concerning inclusive approaches to special education and related service delivery is that of whether widespread implementation in regular school settings is feasible. Developers of QEI model programs were asked to create a degree-of-implementation indicator system that could be used by site personnel to determine the extent to which critical program features were being implemented at the criterion level. Information on the degree of implementation of each of the models at every participating site was collected twice a year for three years.

A high degree of implementation was achieved by the end of the first year at almost every site for each QEI model. The average degree of implementation scone was 82.4. That is, about 82 percent of the key features of the model programs were observed to have been implemented by the end of the first year. This high degree of implementation was maintained during the second and third years. The overall pattern of a high degree of QEI implementation over three years suggests the feasibility of implementing a wide range of inclusive instructional approaches to provide special education services in a variety of regular classroom settings in schools varying in geographic and demographic characteristics.

Does Implementation of Inclusive Education Models Lead to Intended Classroom Process and Achievement Outcomes?

Among the most frequently raised questions concerning integration of special education students in regular classroom settings are whether and to what extent there are differences in classroom behavior

and in the rate of progress between students in schools using inclusive education models and students from comparison schools not using these programs; whether special education students mainstreamed in regular classes exhibit classroom behavior and patterns of progress similar to those of their regular education peers; and whether regular education students also benefit from inclusive education programs.

Student achievement and classroom behavior data were examined to determine the overall impact of the various inclusive education models on regular and special education students. Findings from three years of implementation of the QEI inclusive education models in a variety of school sites in Pennsylvania suggest very promising patterns of student outcomes. They are highlighted below.

Student Achievement

- Regular education students in the inclusive education classes showed an above-the-national-norm mean scone on standardized achievement tests for all three years of QEI implementation. Contrary to concerns over the potential negative impact that inclusive education approaches may have on the achievement of regular education students, the achievement data indicate that the inclusion of special education students did not negatively affect the achievement of the regular education students.
- When the achievement scores of the regular education students in the inclusive education and comparison classes were examined, the students in the inclusive education classes were found to have outperformed students in the comparison classes in both reading and mathematics by the end of the second year of program implementation. This occurred despite the fact that the students in the model classes initially had lower scores than the comparison students in the first year.
- Special education students mainstreamed in the inclusive education classes made about a one-year gain in Normal Curve Equivalent (NCE) scores for all three years for sites where three years of gain data were available for analysis. The achievement gains shown by the special education students in

QEI classes are particularly encouraging in light of their prior performance and the national statistics.

- A decrease of 42 percent in special education referrals was observed in the QEI participating schools over the three program years.

Classroom Behavior

- A consistent pattern of positive classroom processes was observed for both the mainstreamed special education students and the regular education students in inclusive education classes. Across all models, QEI classes showed a pattern of effective classroom processes that is consistent with the research base in the literature on effective-schools research. For example, QEI students were consistently observed to actively engage in a variety of activities, with an average of over 90 percent of the time across all observation periods during all three years. When they interacted with teachers, most of their interactions were for instructional rather than management purposes; when they interacted with their peers, they did so most frequently to share ideas.
- No noticeable differences were exhibited in the behavior patterns and classroom activities between mainstreamed special education students and their regular education peers. Both groups of students were observed to exhibit a similar pattern of effective classroom behavior.
- Mainstreamed special education students in the inclusive education classes tended to interact with teachers and support personnel more frequently than did regular education students.
- The comparatively greater frequency of interaction between teachers and support personnel with mainstreamed special education students was achieved with no loss in positive outcomes for regular education students.
- Teachers implementing the inclusive education models were observed to spend more of their class time working with students in small groups or on an individual basis than teachers in the comparison

classes. QEI teachers spent, on average, about 33 percent of their class time in whole-class activities, while teachers in the comparison classes averaged almost 67 percent of their time on whole-class activities.

- Similar patterns of use of the different types of instructional strategies (e.g., communicate task procedures, interact to focus on task content, check student work, praise student performance, question, and explain) were observed in both groups of teachers. However, teachers in the comparison classes were observed to interact significantly more frequently with students for management purposes and to work less with individual students. This finding is particularly noteworthy, since a major concern of QEI was its potentially negative impact on classroom processes resulting from inclusion of special education students. The data suggest that despite this concern, teachers in the inclusive education classes actually spent less of their classroom interaction time on management concerns compared with teachers in comparison classes without special education students.

What Are the Administrators' and Teachers' Assessments of Inclusive Education Approaches?

Results from a survey of the attitudes of and appraisals by the participating administrators and teachers suggest an overall positive attitude toward the implementation and outcomes of the various inclusive education models. School administrators rated a high level of satisfaction with the choice of the particular inclusive education model program being implemented in their respective schools. They believed that they had a very good understanding of the rationale and design of the model they were implementing, and that the model implemented is based on the assumption that all students can learn if the learning experiences are designed to be adaptable to the individual needs of the students. The lack of meeting and training time for the staff, and the reluctance and skepticism of parents and teachers about

inclusive education were most frequently cited by administrators as the major problems encountered. The administrators attribute the positive impact of QEI to the close match between the philosophy of the school and the design of the particular model program chosen for implementation.

Findings from the teacher attitude survey generally suggest a very positive attitude toward the design and impact of the inclusive education models. Among the program features and outcomes that had the highest average ratings were fostering student responsibility, professional growth of the teachers, communication with other staff, materials and classroom management procedures, student choices, and student achievement.

IMPLICATIONS FOR IMPROVING SPECIAL EDUCATION DELIVERY

A substantial knowledge base on how schools can implement effective practices to significantly improve their capability to respond to the learning needs of children who require "special" intervention is available. The database on highly sophisticated pedagogical and technical advances continues to grow as school-based innovative approaches to providing inclusive education for *all* children, including children with special needs, are implemented.

Findings from research and expert judgments reported in the study cited in this chapter call attention to alterable variables, such as the amount and quality of learning, instruction and parental support for learning, that are closely tied to the day-today experience of children. These findings diminish the value of remote dispositional analyses, such as those finding discrepancies between IQ and achievement or hypothesizing about "underlying process deficits." Furthermore, effective implementation of innovative programs focusing on alterable variables that have the greatest direct influence has proved to be both feasible and productive for improving student learning. Large-scale implementation of innovative inclusive education approaches, such as the QEI, are contributing to the much-needed technical know-how on how to use what is known to work in improving school practices.

The findings reported in this chapter help to sketch out the knowledge base for restructuring the current practice of the two-systems approach to special education delivery. The high consensus on variables that are important in arranging learning environments suggests that much of the work to be done in the immediate future should involve the development of inclusive systems of delivery that require integration of the knowledge base and expertise of regular and special educators in serving the individual needs of all of the diverse students schools today are challenged to serve.

The state of the art is far in advance of the state of the practice. Special education could be greatly improved by rigorous efforts based on principles identified as important for learning. By using the best of what is currently known to work, we can design and maintain educationally powerful school learning environments for all students.

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The Laboratory for Student Success

The Laboratory for Student Success (LSS) is one of ten regional educational laboratories in the nation funded by the U.S. Department of Education to revitalize and reform educational practice in the service of children and youth.

The mission of the Laboratory for Student Success is to strengthen the capacity of the mid-Atlantic region to enact and sustain lasting systemic educational reform through collaborative programs of applied research and development and services to the field. In particular, the LSS facilitates the transformation of research-based knowledge into useful tools that can be readily integrated into the educational reform process both regionally and nationally. To ensure a high degree of effectiveness, the work of the LSS is continuously refined based on feedback from the field on what is working and what is needed in improving educational practice.

The ultimate goal of the LSS is the formation of a connected system of schools, parents, community agencies, professional organizations, and institutions of higher education that serves the needs of all students and is linked with a high-tech national system for information exchange. In particular, the aim is to bring researchers and research-based knowledge into synergistic coordination with other efforts for educational improvement led by field-based professionals.

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